

THE CLAIMS

1. A method of processing an image, the method comprising estimating a parameter for local color correction, the parameter estimation including computing a cumulative histogram path length of the image.

2. The method of claim 1, wherein computing the cumulative histogram path length includes:
 - generating a raw histogram of the image;
 - generating a cumulative histogram of the image from the raw histogram;
 - and
 - determining the cumulative histogram path length of the image from the cumulative histogram.

3. The method of claim 2, further comprising normalizing the cumulative histogram, wherein the cumulative histogram path length is computed from the normalized cumulative histogram.

4. A method for processing an image, the method comprising:
 - performing different local color corrections for the image; and
 - computing cumulative histogram path lengths for the different color corrections.

5. The method of claim 4, further comprising selecting the cumulative histogram path length having the shortest length.

6. The method of claim 5, further comprising computing the cumulative histogram path length for the image uncorrected; wherein the selection is also based on the cumulative histogram path length for the uncorrected image.

7. The method of claim 5, further comprising performing full local color correction on the image, the full correction corresponding to the minimum cumulative histogram path length.

8. The method of claim 4, wherein different local color correction algorithms are used to perform the different local color corrections.

9. The method of claim 4, wherein different correction strengths are used to perform the different local color corrections.

10. The method of claim 4, wherein the different local color corrections are approximations.

11. The method of claim 4, wherein the different local color corrections are performed using a sigmoidal-exponential tone reproduction algorithm at different strengths.

12. The method of claim 11, wherein the different local color corrections are implemented in lookup tables.

13. The method of claim 4, further comprising computing an upper bound for the minimum cumulative histogram path length.

14. The method of claim 4, wherein the image is a thumbnail image.

15. Apparatus for processing an image, the apparatus comprising:
means for generating a cumulative histogram path length of the image; and
means for using the cumulative histogram path length to determine whether
the image should be color-corrected.
16. The apparatus of claim 15, further comprising means for determining
a strength of local color correction.
17. The apparatus of claim 15, further comprising means for performing
local color correction according to a minimum cumulative histogram path length.
18. Apparatus for processing an image, the apparatus comprising a
processor for determining a cumulative histogram path length of the image, and
using the cumulative histogram path length to determine whether the image should
be color-corrected.
19. The apparatus of claim 18, wherein determining the cumulative
histogram path length includes generating a raw histogram of the image;
generating a cumulative histogram of the image from the raw histogram; and
determining the cumulative histogram path length of the image from the
cumulative histogram.
20. The apparatus of claim 18, wherein the processor performs a
plurality of different local color corrections for the image, determines an initial
cumulative histogram path length for each local color correction, determines an
initial cumulative histogram path length for the image uncorrected, and determines
the cumulative histogram path length of the image as the minimum of the initial
cumulative histogram path lengths.

21. The apparatus of claim 20, wherein the processor further performs full local color correction on the image, the full correction corresponding to the minimum cumulative histogram path length.
22. The apparatus of claim 20, wherein the processor also computes an upper bound for the minimum cumulative histogram path length.
23. The apparatus of claim 20, wherein the different local color corrections are performed using a sigmoidal-exponential tone reproduction algorithm at different strengths.
24. The apparatus of claim 23, wherein the different local color corrections are implemented in lookup tables.
25. The apparatus of claim 23, wherein the different local color corrections are approximations.
26. The apparatus of claim 18, wherein the apparatus is an imaging device.
27. An article for a processor for processing an image, the article comprising computer memory encoded with instructions for instructing the processor to generate a cumulative histogram path length of the image; and use the cumulative histogram path length to determine whether the image should be color-corrected.
28. The article of claim 27, wherein determining the cumulative histogram path length includes generating a raw histogram of the image, generating a cumulative histogram of the image from the raw histogram, and determining the cumulative histogram path length of the image from the cumulative histogram.

29. The article of claim 27, wherein the instructions instruct the processor to perform a plurality of different local color corrections for the image, determine an initial cumulative histogram path length for each local color correction, determine an initial cumulative histogram path length for the image uncorrected, and determine the cumulative histogram path length of the image as the minimum of the initial cumulative histogram path lengths.

30. The article of claim 29, wherein the instructions also instruct the processor to perform full local color correction on the image, the full correction corresponding to the minimum cumulative histogram path length.

31. The article of claim 29, wherein the instructions also instruct the processor to compute an upper bound for the minimum cumulative histogram path length.

32. The article of claim 32, wherein the different local color corrections are performed using a sigmoidal-exponential tone reproduction algorithm at different strengths.

33. The article of claim 29, wherein computer memory is further encoded with lookup tables for implementing the different local color corrections.

34. The article of claim 24, wherein the different local color corrections are approximations.